



A.D. 1859, 5th OCTOBER. N° 2265.

SPECIFICATION

OF

WILLIAM LOUIS EARLE.

APPARATUS FOR THE COMBUSTION OF  
SMOKE, &c.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,  
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY :

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25, SOUTHAMPTON BUILDINGS, HOLBORN.

1860.







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## Apparatus for the Combustion of Smoke, &c.

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*(This Invention received Provisional Protection only.)*

**PROVISIONAL SPECIFICATION** left by William Louis Earle at the Office of the Commissioners of Patents, with his Petition, on the 5th October 1859.

I, WILLIAM LOUIS EARLE, of Alfred Place, Bedford Square, in the County  
5 of Middlesex, Gentleman, do hereby declare the nature of the said Invention,  
for “**IMPROVEMENTS IN APPARATUS FOR PROMOTING THE COMBUSTION OF SMOKE AND  
GASES ARISING FROM FUEL,**” to be as follows:—

My Invention relates to improved apparatus for effecting and regulating the  
mixture of gases and smoke evolved in furnaces with air, in order to promote  
10 combustion, being further improvements in or modifications of that for which  
Provisional Protection has been granted to me, dated September 5th, 1859,  
No. 2026, in which the apparatus is described as being preferably of a wedge-  
form, with perforations emerging on the incline side. Now, I further make  
such mixing apparatus of any suitable form, and instead of subdividing the  
15 several films of air and smoke by numerous secondary partitions, I pass the air  
and smoke through the apparatus, simply in films arranged in alternate order,  
or they be subdivided at the surface of emergence by small partitions;  
instead of altogether suppressing the secondary partitions, they may be sup-  
pressed only in either the air or smoke passages, say, to admit the smoke in  
20 films, while the air passes through numerous perforations, being merely the  
films subdivided. In this manner I find a rectangular form of apparatus well  
adapted for the purpose, the smoke being allowed to pass directly from side to

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*Earle's Improvements in Apparatus for the Combustion of Smoke, &c.*

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side through narrow slit-like perforations, while the air ascends from below in films intermediate of the planes of the smoke perforations, and escaping in a direction at right angles, or otherwise, to the ingress, either in the form of films or further subdivided on emerging. According to this arrangement, I find the apparatus may be readily constructed of plates or sheets of refractory material, 5 in which the passages for the films of smoke and air may be readily formed by indentation in the sides, which plates may be placed together while still plastic, and burnt, or they may be burnt and combined afterwards, as required, and adapted for the furnace to which they are to be applied. Instead of carrying both sets of perforations through the apparatus, so that the air and smoke 10 combine only on emerging from the perforations; I sometimes increase the sectional area of the one series of passages towards the flues or combustion chamber, and admit by numerous transverse perforations the air to pass into the smoke passage, and mix therewith previous to emerging into the combustion chamber, or it may be the smoke that is admitted into the air passages. 15 By all these means I am enabled to supply air in sufficient quantities, & to intimately mix it with the smoke and gases to ensure the desired combustion.

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Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,  
Printers to the Queen's most Excellent Majesty. 1860.